

METHOD AND APPARATUS FOR DISPENSING EPOXY

CROSS REFERENCE TO RELATED APPLICATIONS

This application is an improvement of the invention disclosed in U.S. Pat. No. 3,540,626 issued Nov. 17, 1970.

BACKGROUND OF INVENTION

The resin mixer and dispenser described and claimed in the aforementioned patent offered significant improvements over dispensing devices previously developed. However, under certain operating conditions the epoxy formed by mixing catalyst and resin tended to drip from the pouring spout of the mixing and dispensing head between dispensing cycles.

Leakage at the pouring spout is undesirable since the accuracy of measurement of the quantity of epoxy to be dispensed is affected.

SUMMARY OF INVENTION

I have developed an improved mixing and dispensing apparatus comprising a mixing head having a rotatable convoluted member disposed in a central passage therein. The passage in the mixing head has a valve seat adjacent an end thereof and the convoluted member has a valve member secured thereto such that the valve member is moved into and out of sealing relation with the valve seat when the convoluted member is moved longitudinally through the passage in the head.

The convoluted member is rotated by a motor connected to the upper end thereof through a coupling which is adapted to move the convoluted member through the passage in the mixing and dispensing head when the motor starts rotating to disengage the valve member from the valve seat. As the motor is de-energized the valve member is urged back into sealing relation with the valve seat thus sealing the pouring spout of the dispensing head to prevent leakage of fluid therefrom.

The apparatus for preparing and proportioning the resin and catalyst before injecting same into the mixing head comprises containers for liquid resin and catalyst with pumps to simultaneously withdraw resin and catalyst therefrom and pass same through heated conduits to the dispensing head.

The resin and catalyst are preferably circulated continuously through heated conduits to maintain same in non-viscous fluid state and to eliminate the necessity of further agitation to maintain the resin and catalyst in suspension. When valves in the conduits are opened the catalyst and resin flow into the dispensing head where they are agitated, mixed and dispensed therefrom in selected quantity.

Thermostatically controlled heating devices are provided for maintaining the resin and catalyst at equal or different temperatures as desired and temperature gauges are provided to indicate the temperature of each ingredient. Pressure indicator gauges are provided in combination with an alarm device to assure that pressure in catalyst and resin conduits are properly maintained to facilitate proportioning of ingredients in the mixing head.

A purge system is provided wherein purging fluid may be directed through the mixing head to clean same by the simple manipulation of valves. When the valve

is in one position, air pressure from the purging tank is exhausted and when in the other position, air pressure is exhausted from the mixing head valve mechanism so as to avoid any possibility of solvent or purging agent mixing with the resin while the device is in the run position. The system may be purged of resin and catalyst without the necessity of disconnecting or reconnecting lines thus assuring that the mixing head can be easily and quickly flushed at any time.

A primary object of the present invention is to provide an improved method and apparatus for mixing and dispensing resin wherein the catalyst and resin are continuously circulated and maintained in a heated state ready for use and may be quickly and thoroughly mixed and dispensed by simply closing a foot pedal operated switch.

Another object of the invention is to provide apparatus for mixing and dispensing resin having a convoluted member which is both rotatable for agitating and mixing resin and catalyst preparatory to dispensing, and which is movable longitudinally for opening and closing the pouring spout through which the material is dispensed to prevent leakage between dispensing cycles.

Another object of the invention is to provide a liquid resin-catalyst mixing and dispensing device wherein the mixing and dispensing head may be quickly and easily purged and cleaned to prevent the setting up of resin-catalyst mixture therein by the simple manipulation of a valve.

Still another object of the invention is to provide a liquid resin-catalyst mixing and dispensing device wherein the resin-catalyst mixture may be tested at any time.

Still another object of the invention is to provide adjustable heating means in a liquid resin-catalyst mixing and dispensing device wherein the resin and catalyst may be separately heated at selected temperatures as it is circulated therethrough and wherein the resin and catalyst is agitated as it is circulated.

A further object of the invention is to provide a heating element and a heat sensing device in a rod having a convoluted outer surface such that when the rod is positioned in a conduit the resin and catalyst may be heated to desired temperatures without cooking the material.

A still further object of the invention is to provide a mixing and dispensing head for a liquid resin-catalyst mixing and dispensing device which thoroughly mixes the resin and catalyst as it is dispensed, and wherein the mixing head may be quickly and easily disassembled for cleaning or replacement of parts.

Still another object of the invention is to provide a liquid resin-catalyst mixing and dispensing device with visual and audible warning means thereon to indicate when the device is functioning or is not functioning to the extent to allow resin-catalyst to set up therein.

A general object of the invention is to provide a simple, portable liquid resin-catalyst mixing and dispensing device which is relatively inexpensive to manufacture, safe and foolproof.

Other and further objects of the invention will become apparent upon reading the detailed specification hereinafter following and by referring to the drawings annexed hereto.